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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/813,528	03/30/2004	Toshimasa Kobayashi	09794353-0033	5835

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EXAMINER
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MULPURI, SAVITRI

ART UNIT	PAPER NUMBER
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2812

MAIL DATE	DELIVERY MODE
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12/31/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/813,528	<b>Applicant(s)</b> KOBAYASHI ET AL.	
	<b>Examiner</b> Savitri Mulpuri	<b>Art Unit</b> 2812	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 September 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8, 12-18, 20, 21, 27-39, 42, 44, 46, 48, 50, 52, 54 and 56 is/are pending in the application.
- 4a) Of the above claim(s) 40, 41, 43, 45, 47, 49, 51, 53, 55, 57 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8, 12-18, 20, 21, 27-39, 42, 44, 46, 48, 50, 52, 54 and 56 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

This action is in response to the applicant's communication filed on 9/14/2007.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-8, 12- 18, 20-21, 27-39, 42, 44, 46, 48, 50, 52, 54, 46 rejected under 35 U.S.C. 102(e) as being anticipated by Asatsuma et al (US 7,176,499A).

Asatsuma et al et al teaches laterally growing GaN layer on the GaN substrate. Asatsuma et al particularly teaches striped shaped second regions and at least one of the second regions having a c-axis inverted relative to the first regions (Fig 1-36 and related description, which are similar to figures 1-28 in the instant invention)

With respect to claims 12-18, claims 31-33 the interval between two adjacent second regions is 20 microns or greater (col. 3, lines 58-67)

With respect to claims 20-21, 30 the third regions are disposed between the first region and the second regions, the third regions having third average dislocation

density that is greater than the first average dislocation density and lower than the second average dislocation density(col3, lines 52-67, col. 4, lines 1-6).

With respect to claims 27-29 the average dislocation density of each second region is five times greater than the average dislocation density of the first region (col.4, lines 13-20)

Claimed shapes of second regions and the claimed distance between two adjacent second regions (claims 12-17 and the claimed diameter of the second regions and relative diameters of second and third regions are obvious because the dislocation density of second region higher than the dislocation density of the first region. Claimed defect densities in claim 29-30 in first and second and third regions are obvious in the invention of Asatsuma et al. It would have been obvious to one of ordinary skill in the art to choose different shapes of second region, different distance between the second regions and different diameter of second and third regions through routine optimization to obtain reduced dislocation densities in the active region, where the device is fabricated.

With respect to claims 48, 52, 56, the additional limitations of "plurality of stripe-shaped second regions that laterally extend and that are made of a crystal has a second average dislocation density" are recited in the Asatsuma et al (col. 12, lines 30-37).

With respect to claims 46,50,56 , the additional limitation of "the second region being arranged at a first interval in a first direction and at a second interval in a

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second direction perpendicular to the first direction, the second interval being smaller than the first interval "(col.10, lines 20-28).

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1-8, 12- 18, 20-21, 27-39,542, 44, 46, 48, 50, 52, 54, 46 rejected under 35 U.S.C. 102(a) as being anticipated by Asazuma et al (JP 2004088134 A)

Note that Publication by Asazuma et al (JP-2004088134 A), published on 3/18/2007, which is prior to instant application effective filing date 3/30/3004. From the figures and abstract, it is noticed that the disclosure in the JP-2004088134 A is similar to the disclosure in the above applied reference by Asatsuma et al (US 7,176,499A), therefore all the pending claims are anticipated by Asazuma et al.

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-8, 12- 18, 20-21,27--39,42, 44, 48, 52, 56 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-12 of U.S. Patent No. 7,091,056 in view of Ito et al (US 20050042787). Although the conflicting claims are not identical, they are not patentably distinct from each other because the scope of the instant claims is encompassed by the scope of the patented claims. Note that the previous applied co-pending application 11/148,771 turned patent US 7,091,056 A). With respect to claims 20-21, 30 the patented claims does not include the limitation of "third region having dislocation density greeter than the first dislocation and lower than the second dislocation density, however such limitation would have been obvious in the invention of patented claims in view of Ito et al see para 0063.

### ***Response to Arguments***

Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection. The Affidavits filed on 9/14/2007 under 37 CFR 1.131 is sufficient to overcome the Motoki et al reference.

Applicant's arguments with respect to claims Claims 1-8, 12- 18, 20-21, 27-39,542, 44, 46, 48,50,52,54,46 have been considered but are moot in view of the new ground(s) of rejection.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. It is noted that the application 10/813,371 and the instant


application 10/813,528 filed on 3/30/2007., where one of the inventors (motoki) is common.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Savitri Mulpuri whose telephone number is 57-72-1677. The examiner can normally be reached on Mon-Fri from 8 a.m. to 4.30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Lebentritt, can be reached on 571-272-1873. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Savitri Mulpuri  
Primary Examiner  
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